

**REMARKS**

Reconsideration of the present application is respectfully requested.

Claims 1, 3-4, 6-24, 26-27 and 29 previously presented for examination remain in the application. Claims 1, 3, 4, 6, 7, 8, 10-11, 17, 19, 22 and 26 have been amended. Claims 2, 5, 25 and 28 have been canceled. No new claims have been added.

The abstract of the disclosure stands objected to because it is considered that the current abstract does not reflect the inventive features of the claimed invention to distinguish over the prior art. Applicant has amended the abstract as indicated and respectfully submits that the abstract meets the standards set forth in MPEP 608.01

Claims 1-29 stand rejected under 35 U.S.C. § 102(b) as being considered to be anticipated by U.S. Patent No. 5,159,690 to Margolus et al. ("Margolus").

**Claim 1 includes the limitations**

a first memory to store instructions and data for use by the processor, the first memory further to store data representing a first state of a cellular automaton at a first time step, the data to be organized in cells;

a first update engine, the first update engine including a microprocessor execution unit capable of executing general purpose microprocessor instructions;

a cellular automaton prefetch state machine to prefetch data from cells to be updated and associated neighborhood cells and store the prefetched data in a neighborhood buffer; and

a cellular automaton update unit to provide data from the neighborhood buffer to the first update engine,

the first update engine to update at least some of the selected cells according to an update rule and a state of any associated neighborhood cells to provide a state of the cellular automaton at a second time step, the first memory, the cellular automaton prefetch state machine, the neighborhood buffer, the

first update engine and the cellular automaton update unit being integrated on a single micro-processor chip.

(Claim 1)(emphasis added).

Applicant respectfully submits that Margolus fails to teach or suggest at least a single integrated circuit chip capable of storing and updating data representing a cellular automaton as previously argued and further fails to teach or suggest the cellular automaton prefetch state machine that prefetches data associated with the cellular automaton that is subsequently stored in a neighborhood buffer.

As previously discussed, Margolus discloses a computer system and approach for coordinating the activity of multiple processors to permute stored data elements and apply transformation rules to permuted elements. (see e.g. Margolus, Abstract). Margolus refers to the use of multiple processors and memory components to store and update cellular automata data. As described in Margolus, the processors of Margolus are actually large static-RAM lookup tables and not micro-processors. (col. 9, lines 1-2).

Margolus does not teach or suggest the claimed prefetch state machine that prefetches data that is subsequently stored in a neighborhood buffer as set forth in the claims.

It is stated in a previous Office Action that the claimed prefetch unit is considered to be disclosed at column 7 line 24 and/or column 9, line 13.

Applicant respectfully submits that this is not a fair characterization of Margolus. The disclosure at column 7 line 24 merely refers to reading the memory and not to prefetching data associated with a cell to be updated, and there is no

disclosure of storing prefetched data in a neighborhood buffer. The disclosure at column 9 line 13 merely refers to updating cell memory.

For at least these reasons, claim 1 is patentably distinguished over Margolus. Applicant further maintains that the claimed feature of integrating these elements on a single processor chip further operates to patentably distinguish embodiments of the invention from Margolus.

Independent claims 11, 19, and 22 include a similar limitation to that argued above in reference to claim 1. Claims 3-4 and 6-10, claims 12-18, claims 20-21 and claims 23-24, 26-27 and 29 depend from and further limit claims 1, 11, 19 and 22, respectively, and thus, should be found to be patentably distinguished over Margolus for at least the same reasons.

Based on the foregoing, applicants respectfully submit that the applicable rejections have been overcome and that claims 1-29 are in condition for allowance.

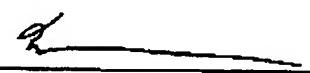
If the Examiner disagrees or believes that further discussion will expedite prosecution of this case, the Examiner is invited to telephone applicant's representative Cynthia Thomas Faatz at (408) 765-2057.

If there are any charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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